

# COMPETITIVE POSITION

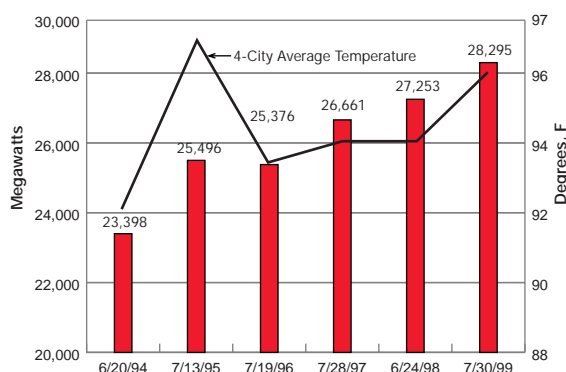
## Generating Prosperity Through Operational Excellence

### Generation Efficiency

TVA is operationally sound and efficient today, providing the low-cost, reliable electricity necessary to meet the needs of the people of the Tennessee Valley. Through meticulous attention to maintenance and modernization, aggressive pursuit of greater productivity, and optimizing the use of assets, TVA has been able to ensure its plants are available when they are needed most.

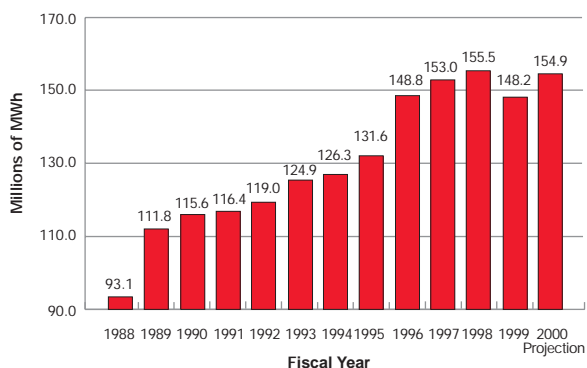
While economic growth in the Tennessee Valley region continues to push demand for electricity upward, TVA has established a record of consistently meeting peak demands. In fact, TVA surpassed its previous all-time peak demand on eight out of ten consecutive days in July, 1999 which was attributable largely to the region's economic growth and a period of unusually warm weather. On July 30, 1999, TVA established a new record peak demand of 28,295 megawatts.

TVA Summer Peaks  
Net System Load vs Temperature



TVA generated over 148 million megawatt hours in 1999.

Net System Generation



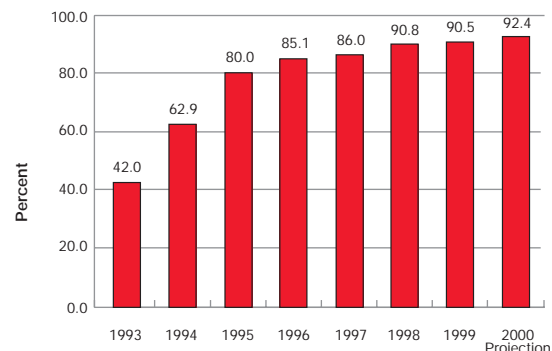
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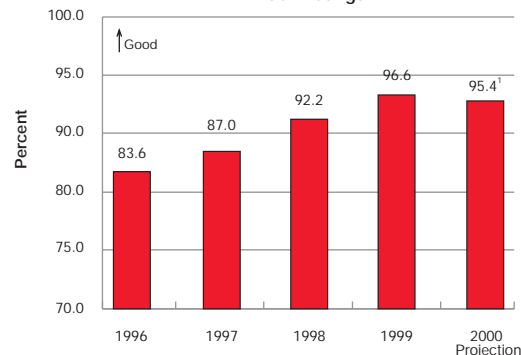
### Nuclear

- Increased TVA's nuclear capacity through power upgrades of the Browns Ferry Unit. This added over 100 megawatts to TVA's nuclear capacity.
- Generated 4.45 million megawatt hours in 1999 with a TVA nuclear net capacity factor of 90.5 percent. This is the fourth year in a row that TVA set a new TVA record for nuclear generation, contributing 30 percent to TVA's total net generation in 1999.
- Produced over 1.85 million megawatt hours in 1999 at Sequoyah - its highest generation ever - with a site net capacity factor of 93.3 percent.
- Completed its third recent 100-day run when all five nuclear units operated continuously from May 16, 1999, to September 15, 1999, a period of 121.8 days. During this time, 1.64 million megawatt hours of electricity were generated by nuclear facilities.
- Set a world record for ice condenser plants with a refueling outage of 23.2 days at Sequoyah Unit 2 in May 1999. This breaks the previous record of under 30 days set at Sequoyah Unit 1.

Nuclear Net Capacity Factor

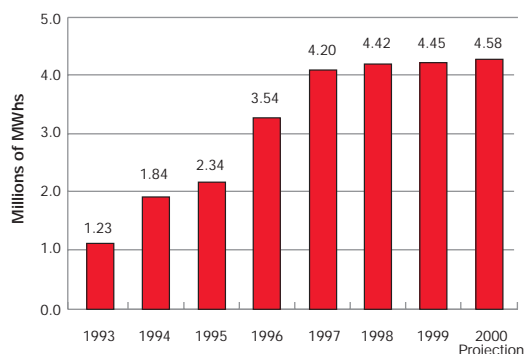


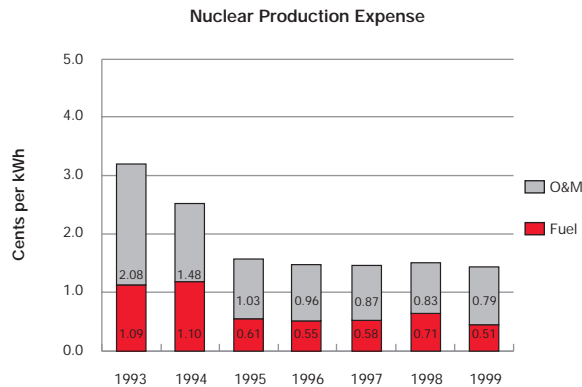
Current TVA Institute of Nuclear Power Operations (INPO) Index Ratings



<sup>1</sup>TVA's INPO rating is projected to decrease in fiscal year 2000 due to the timing of planned outages.

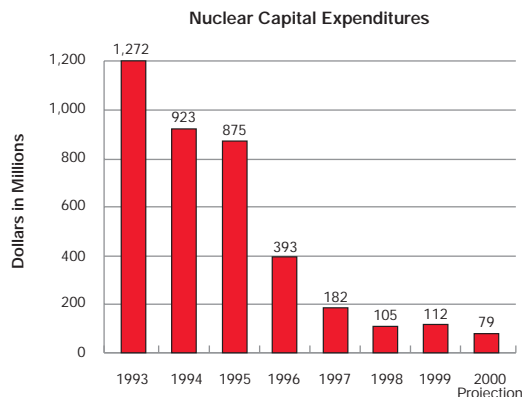
Nuclear Net Generation





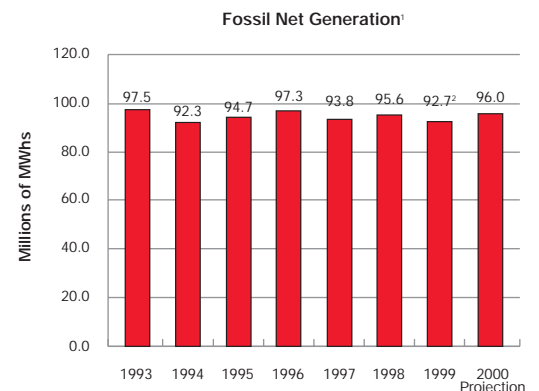
- Reduced nuclear production expense by 15 percent from 1998 to 1999.
- Reclassified remaining higher-priced uranium to market price in 1999. TVA's nuclear production cost is impacted by fuel purchased in the 1970's and 1980's at prices well above current market prices. TVA is able to burn older, higher-priced uranium faster as a result of high capacity factors.
- Established future targets and began implementing plans to maintain production costs at all three nuclear plants in the top 25 percent in the industry.

Nuclear capital expenditures in fiscal year 2000 are focused primarily on reliability projects and obsolete equipment replacement.



## Fossil

- Awarded a five-star rating by Resource Data International (RDI) for Cumberland Fossil Plant's 1998 performance across a number of operational areas. RDI awarded the five-star rating to only 28 plants across the country.
- Ranked Bull Run Fossil Plant fourth among the country's steam plants in heat rate (a measure of efficiency) according to *Electric Light & Power* magazine's October 1999 report of top utilities across the country.
- Generated over 7 million megawatt hours at Gallatin Fossil Plant, the most generated by the plant since 1988, and the second highest in the last 30 years.
- Generated over 5.5 million megawatt hours at John Sevier Fossil Plant, the most generated at the plant in 17 years.
- Improved equipment reliability which resulted in several TVA fossil generating units setting new continuous operation records for the year:
  - Allen - Unit 1 - 146 days
  - Allen - Unit 2 - 131 days
  - Colbert - Unit 1 - 190 days
  - Colbert - Unit 3 - 201 days
  - Colbert - Unit 5 - 79 days
  - Cumberland - Unit 1 - 217 days
- Selected as one of the two finalists in the 1999 RIT/USA *Today* Quality Cup competition for the work performed by TVA's Economizer Transport Piping Team.



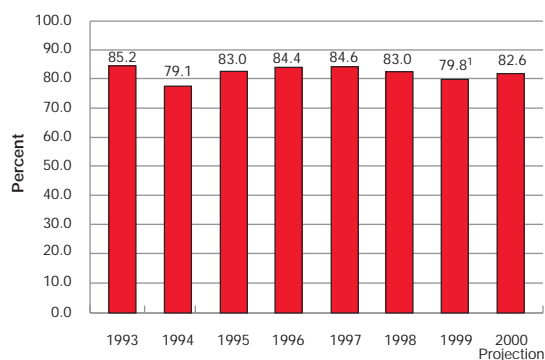
<sup>1</sup> Includes combustion turbines.

<sup>2</sup> Generation was reduced in FY99 due to a combination of higher than projected nuclear generation for the year, mild winter and spring temperatures, and unplanned outages at some plants which resulted in reduced power demand.

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Fossil System Equivalent Availability Factor



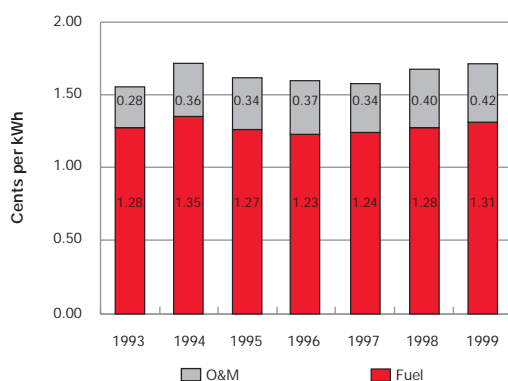
<sup>1</sup> The drop in Fossil System Equivalent Availability Factor for FY99 is primarily due to one of TVA's larger units being off-line for an extended period during the year.

During 1999, efforts were focused on improving the reliability of TVA's fossil plants during peak periods when the availability of the replacement power is generally limited and when its cost tends to be greatest.

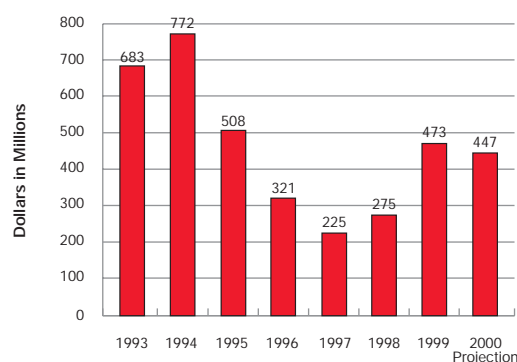
Major fossil projects completed in 1999 or currently underway include:

- Addition of environmental controls and plant modifications to reduce sulfur dioxide and nitrogen oxide emissions to comply with Clean Air Act requirements. In addition, Selective Catalytic Reduction (SCR) devices are being installed to further reduce nitrogen oxide emissions in support of Valley states' improvement of local and regional air quality.
- Installation of new combustion turbines prior to the summers of 2000 and 2001 to help meet growing power demands during peak seasons.
- Construction of coal dumping and unloading facilities at Kingston Fossil Plant to reduce fuel delivery and handling costs.

Fossil Production Expense

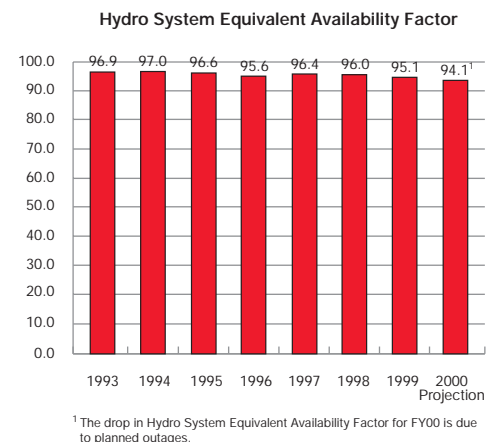
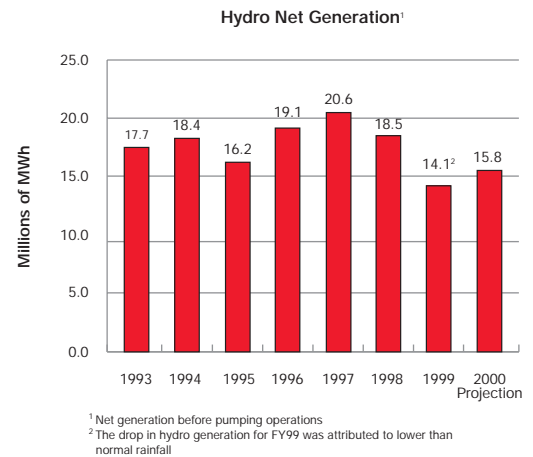


Fossil Capital Expenditures



## Hydro

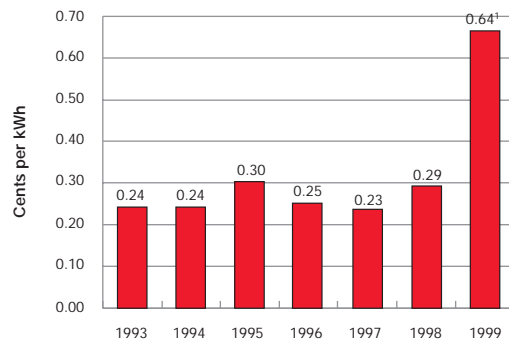
- TVA's program to automate conventional hydro generation will centralize operation and control of units and reduce production costs, increase generation, and improve unit efficiencies. Three plants were complete in fiscal year 1999 (Douglas, Norris, and Cherokee in Northeast Tennessee). By 2004, all 29 of TVA's conventional hydro generating facilities will be automated and controlled from the Hydro Dispatch Control Center.
- TVA's Hydro Modernization and Pumped Storage Upgrade Programs will add 720 MWs of peaking capacity to the hydro system. Through 1999, 215 MWs of peak generating capacity have been added. In 1999, 63 MWs were added with 43 MWs planned for 2000.
- TVA's Fontana Dam in western North Carolina, was ranked number one as the lowest production expense plant among comparable plants based on data from Resource Data International.
- Over a five-year period, 11 of TVA's 29 hydro plants were in the top ten percent for average production expense on a Mills per kWh basis based on data from Resource Data International. These 11 plants accounted for 65 percent of TVA's hydro net dependable capacity.
- The average forced outage rate, a measure of reliability, of TVA's conventional hydro for fiscal year 1999 was 1.15 percent versus an industry average of 5 percent.



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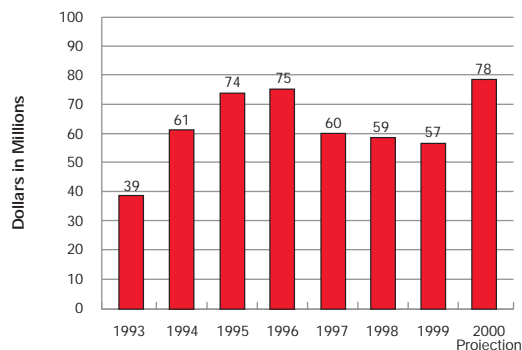
Hydro Production Expense



<sup>1</sup> Production expense in 1999 is based on net generation, which includes Raccoon Mountain Pumped Storage facility.

Primary cost increases in 1999 and 2000 are attributed to lower than projected generation. Rainfall totals for the period July 1998 through May 1999 were the eighth lowest in the last 100 years.

Hydro Capital Expenditures



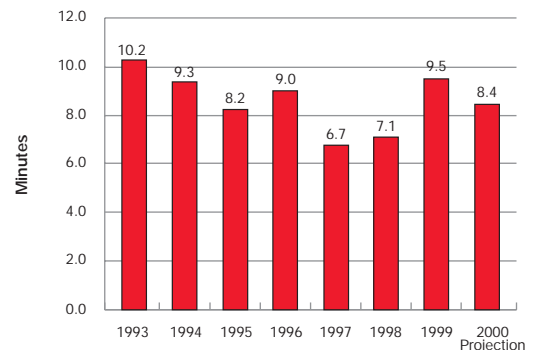
### Transmission Efficiency

- Increased transmission system capacity by nearly 2,000 MW in 1999.
- Completed 46 capital projects to help power long-term economic growth in the region, including 160 miles of new transmission lines and 26 new power delivery points.
- Invested \$1.2 million in the Lightning Mitigation Program to identify and improve the performance of transmission facilities subject

ed to lightning-caused interruptions.

- Significant expenditures in the line right-of-way maintenance are paying off. Tree-related power interruptions are at an all-time low for TVA.

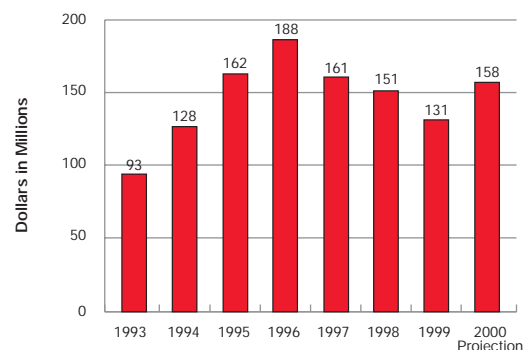
Load Not Served



Projected capital expenditures for 2000 are \$158 million for transmission system additions and delivery points to accommodate economic growth and the related load growth. In addition to improving system reliability, additional projects will help reduce momentary service interruptions and maintain system voltage during peak loading.

TVA completed several capital projects during 1999, including the installation of a 28-mile transmission line in West Tennessee to support rapid economic growth in the South Memphis area and the construction of a new \$47 million substation in North Georgia to help regulate voltage in the area.

Transmission Capital Expenditures



## River Systems Operations and Environmental Efficiency

TVA is more than a power company. And the Tennessee River is more than a source of power. It is the backbone of a sustainable river-based economy dependent on TVA's integrated system for multiple benefits. TVA seeks a balance among the public's competing demands for use of the resources while operating its dams and reservoirs primarily for navigation and flood control and, to the extent consistent with these purposes, for hydroelectric generation.

The unique design of the river management system is a mainstay of TVA's low cost of power and competitive advantage. Each of the system's 54 dams, 29 of which generate power, was sited and designed to work together as part of an entire network; power plants were sited and designed to work with the controllable water flows that the dams provide. Thus, each piece of the system optimizes the productivity of the water and the other system pieces as long as they remain part of the integrated whole.

### Integrated Resource Management

TVA's integrated system unifies economic development objectives across seven state boundaries based on the sustainability of the Tennessee River ecosystem. The TVA Act provides a mechanism for maximizing the multiple public benefits derived from the river basin. These benefits support a national infrastructure which links the Southeast to the rest of the nation's power grid and navigable waterways.

### Navigation

These services keep the navigation system in working order, ensuring safe passage for commercial and recreation vessels 24-hours a day, 365 days a year for 650 miles.

Expertise and authority include -

- Channel buoys, hazard markers, and daymarks

- Lock facilities
- Mooring facilities
- Waterway development to improve navigation and safety
- Navigation rate analyses

### Flood Control

These integrated system services protect life, land and property in two ways: by using structures to keep floods away from people and by keeping people away from flood-prone areas. High dams on the tributaries are used to store water that would otherwise cause floods downstream. The low dams maintain constant flows for industrial and public water consumption, navigation, and power generation.

Three hundred rain gauges and sixty stream gauges provide a continual data flow for continuous adjustments to the system. As a result of the integrated development of TVA's reservoir system, the number of valley-wide floods has been significantly reduced, and virtually all have been reduced to non-damaging levels.

Expertise and authority include -

- Flood loss reduction planning and implementation
- Flood risk analysis, monitoring, and inspection
- Flood damage assessments
- Dam safety to meet federal guidelines
- Technical studies to monitor structural integrity of the dams

### Power Generation

TVA manages the Tennessee River system to optimize hydrogeneration while meeting statutory responsibilities for competing water uses. Daily operations schedules allow TVA to

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produce low-cost electricity while distributing water throughout the system in a safe and environmentally responsible manner. TVA's integrated water management system ensures an adequate and timely supply of generating water for hydroelectric plants and cooling water for fossil and nuclear plants. TVA designs, installs, and operates aeration and minimum flow systems to minimize environmental impacts.

Expertise and authority include -

- Forecast operations
- Scheduling of daily reservoir operations
- Aeration system design and installation

### **Land Resource Planning and Management**

TVA has direct stewardship responsibility for 480,000 acres of reservoir surface area, 11,000 miles of shoreline and 277,000 acres of reservoir land. TVA uses its land holdings to provide recreational opportunities while protecting wildlife, critical wetland habitat, and extensive cultural resources.

Expertise and authority include -

- Planning and development of land resources
- Forestry and wildlife planning
- Historic and cultural resource management
- Recreation facility development and operations

### **Environmental Policy and Planning**

TVA operates its integrated resource management system to balance the generation of low-cost, reliable electricity and environmental protection. TVA's environmental protection and enhancement activities are led by its Environmental Executive and the Environmental Policy and Planning staff.

Expertise and authority include -

- Long-term environmental policy and strategy
- Functional integration of environmental activities
- Primary point of contact for participating in environmental legislative and regulatory development
- Environmental regulatory review and outlook
- Environmental performance analysis and reporting
- Environmental auditing
- Environmental impact analysis and NEPA administration
- Environmental training